O00220.70002.US), titled "Method and System for Ascribing a Reputation to an Entity from the Perspective of Another Entity" by Giorgos Zacharia, U.S. Application Serial No. 09/710,498 (Attorney Docket No. O00220.70003.US), titled "System and Method for Estimating the Impacts of Multiple Ratings on a Result" by Giorgos Zacharia, and U.S. Application Serial No. 09/710,289 (Attorney Docket No. O00220.70007.US), titled "System and Method for Recursively Estimating a Reputation of an Entity" by Giorgos Zacharia, each application filed on November 10, 2000, is herein incorporated by reference in its entirety.

Please rewrite the paragraph beginning on of page 1, line 19 to read as follows:

The emergence of the Internet and other large networks has increased both the number and kinds of electronic exchanges between entities. As used herein, an electronic exchange is any exchange between two or more entities over an electronic network (i.e., not in person) such as, for example, a voice communications network (e.g., POTS or PBX) or a data communications network (e.g., LAN or the Internet) or a voice-and-data communications network (e.g., voice-over-IP network). Electronic exchanges may include electronic business transactions and electronic communications. Such electronic business transactions may include the negotiation and closing of a sale of goods or services, including solicitation of customers, making an offer and accepting an offer. For example, in consumer-to-consumer electronic marketplaces (e.g., the eBay, OnSale, Yahoo and Amazon marketplaces found on the global Internet, entities may transact for the sale and purchase of goods or services.

Please rewrite the paragraph beginning on of page 5, line 28 to read as follows:

To determine a personalized reputation of a first entity from the perspective of a second entity, the first and second entity must be "connected". A first and second entity are connected if a rating path connects the first and second entity. A rating path is a series of rating links that connect a first entity to a second entity. For example, in Fig. 1, entities A_I and A_{II} are connected by several rating paths, including rating paths 312 and 314. Rating path 312 includes rating links 302, 304 and 310, and rating path 314 includes rating links 302, 306 and 308.

Please rewrite the paragraph beginning on of page 11, line 7 to read as follows:

In an aspect of determining a rater reputation of an entity, the result of the comparison of (a) the rating provided by the first rater of a rated entity and (b) other ratings of the rated entity provided by other raters may be weighed over a ratee reputation deviation of the rated entity, as will be described in more detail below in relation to Fig. 5. This ratee reputation deviation represents a deviation of ratings of the rated entity from an expected value of the rating of the rated entity. Entities whose ratee reputations fluctuate over a wide range of values, such as new entities and entities that receive a wide range of ratings (i.e., unstable entities), typically have high ratee reputation deviations. This weighting of the comparison results in a rating predictability that is greater for greater values of ratee reputation deviation and less for lesser values of ratee reputation deviation.

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Please rewrite the paragraph beginning on of page 16, line 12 to read as follows:

Alternatively, if the first entity has provided other ratings of other entities, and rating predictabilities have been generated from these other ratings (e.g., by performing Acts 2 and 4 on the provided ratings), then, in Act 5, the other rating predictabilities may be combined with the rating predictability generated in Act 4 to produce the rater reputation of the first entity. Act 5 may be implemented in any of several different ways. In one implementation, Act 5 may be implemented by averaging all of the generated rating predictabilities associated with each rating provided by the first entity. Accordingly, a rater reputation may be determined by applying the following equation:

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$$\text{Equation 11:} \quad R^{rater} = \frac{1}{n} \circ \sum_{j=1}^{n} P_j(X),$$

Please rewrite the paragraph beginning on of page 20, line 23 to read as follows:

For example, if rater reputations are being determined for the rating entities that provided the most recent 20 ratings, then, M= 20. For the rating entity that provided the earliest rating, m = 20 and m/M = 1. Further, for the rating entity that provided the most recent rating, m = 1 and m/M = 1/20.

Q6

Please rewrite the paragraph beginning on of page 22, line 9 to read as follows:

Further, to seed a reputation system by recursively determining a rater reputation of a first entity, the expected rating for each first rating provided by the first entity may be determined by applying the following equation:

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$$\text{Equation 18:} \quad E_i^{ratee} = \frac{1}{D} \circ \sum_{i-1-C/2}^{i-1+C/2} R_{i-1}^{ratee},$$

where R_{i-1} is the ratee reputation of the rated entity at *i-1*, D is the range of allowed reputation values, *1/C* is the change rate factor and E_i^{ratee} is the determined expect rating.

Please rewrite the paragraph beginning on of page 22, line 16 to read as follows:

Fig. 4 is a data flow diagram illustrating an example embodiment of a system 19 for generating a rater reputation 38. The rater reputation generator 20 may receive a request 21 from a user indicating a request for a first entity's reputation. In response to the user request 21, the rater reputation generator 20 may receive as input a first rater rating 26 and selected second ratings 28, and generate the resulting rater reputation 38 as output, for example, by performing Acts 2-5 of Fig. 2. In one implementation, the rater reputation generator 20 may also receive as input other rating predictabilities 49 to generate a resulting rater reputation 38 by averaging rating predictabilities, as described above in relation to Fig. 2.

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Please rewrite the paragraph beginning on of page 27, line 3 to read as follows:

Equation 19 may be considered a recursive estimation algorithm of Recursive Least Squares (RLS) with a forgetting factor of *F*. Equation 19 estimates recursively an average square deviation of an actual rating from an expected (i.e., estimated) rating described in more detail below in relation to Figs. 8 and 9. For more information regarding Recursive Least Squares, please refer to Chapter 9 of "Lecture Notes and Non-Linear and Non-Stationary Time Series Analysis," by H. Madsen and J. Holst, Institute of Mathematical Modeling (IMM), Technical University of Denmark, Lyngby, Denmark, 1998 (hereinafter the Madsen text), the contents of which is herein incorporated by reference in its entirety.

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Please rewrite the paragraph beginning on of page 29, line 11 to read as follows:

Fig. 7 is a data flow diagram illustrating an example embodiment of a system 79 for generating a rater reputation deviation. A rater reputation deviation generator 82 may receive as

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cont Q10 input an initial rater reputation 22, a rating predictability 46, an initial rater reputation deviation 80 and a forgetting factor 77. Rater reputation deviation generator 82 also may receive other rater reputations 24.

Please rewrite the paragraph beginning on of page 30, line 3 to read as follows:

The forgetting factor 77 may be stored as a constant in a reputation database or similar data structure as described below in relation to Fig. 18. The initial rater reputation 22, the rating predictability 46, the other rater reputations 24 and the initial rater reputation deviation 80 also Q11 may be stored in the reputation database or similar data structure. In response to receiving the rating predictability 46, the rater reputation deviation generator 82 may access the reputation database or similar data structure to access and retrieve values 22, 24, 80 and 77, and generate rater reputation deviation 84. The rater reputation deviation 84 then may be stored in the reputation database or similar structure for later access.

Please rewrite the paragraph beginning on of page 43, line 10 to read as follows:

In a next Act 154, the resulting adjustment matrix may be inverted to produce an inverted adjustment matrix. In a following Act 156, a weighting modification may be generated from the transposed multi-rating vector, an initial weighting vector and a result (e.g., an overall rating or other qualitative assessment). The weighting modification may be generated by applying the following equation:

$$\text{Equation 30:} \quad Z_{\text{mod}} = Y_t - X_t^T Z_{t-1},$$

Q12 where Y_{t-1} is the initial weighting vector, Y_t is the result, and Z_{mod} is the weighting modification. The weighting modification represents a difference between the result Y_t and an estimated result, $X_t^T Z_{t-1}$, according to the initial weighting vector and the multi-rating vector.

Please rewrite the paragraph beginning on of page 49, line 27 to read as follows:

Optionally, the first and second estimated ratee reputations may be weighted by estimated ratee reputation deviations to calculate a weighted average. For example, to determine the third estimated ratee reputation, the following equation may be applied:

Equation 36: $$R_3 = \frac{RD_1^{rater} \circ R_2 + RD_2^{rater} \circ R_1}{RD_1^{rater} + RD_2^{rater}};$$

where R_1 is the first estimated ratee reputation, R_2 is second estimated ratee reputation and R_3 is the third estimated ratee reputation. RD_1^{rater} is a first estimated ratee reputation deviation corresponding to the first estimated ratee reputation and may be determined by application of Equation 21 as described above. RD_2^{rater} is a second estimated ratee reputation deviation corresponding to the second estimated ratee reputation and may be determined by application of Equation 34 or 35 as described above.

Please rewrite the paragraph beginning on of page 50, line 9 to read as follows:

As described above in relation to Equations 21, 34 and 35, for a given estimated ratee reputation, a higher estimated ratee reputation deviation represents a lower reliability of the estimated ratee reputation and, conversely, a lower estimated ratee reputation deviation represents a higher reliability of the estimated ratee reputation. Therefore, if both the first and second estimated ratee reputations were weighted according to their respective ratee reputation deviations, the ratee reputation with a higher deviation and lower reliability would be given more weight (i.e., have a greater impact) in generating the third estimated ratee reputation, which consequently would generate a less reliable third estimated ratee reputation than that defined by Equation 36.

Please rewrite the paragraph beginning on of page 50, line 24 to read as follows:

Fig. 17 is a data flow diagram illustrating an example embodiment of a system 700 for generating an estimated ratee reputation. The system 700 may include a reputation database 726 and an estimated ratee reputation generator 706 that includes a first ratee reputation estimator 708 and a second ratee reputation estimator 712. The reputation database 726 may be a reputation database or similar data structure as described below in relation to Fig. 18.

Please rewrite the paragraph beginning on of page 51, line 1 to read as follows:

The estimated ratee reputation generator 706 may receive ratee attribute reputations 702 and a ratee ID 704. The ratee attribute reputations 702 may be determined, as described above, from attributes corresponding to transactions with a first entity, and the ratee ID 704 may indicate the first entity. The estimated ratee reputation generator 706 may use the ratee ID 704 to access, from reputation database 726, weighting values 718, first estimated ratee reputation deviation 720, second estimated ratee reputation 722 and second estimated ratee reputation deviation 724. The estimated ratee reputation generator 706 may use values 718, 720, 722 and 724 to generate a third estimated ratee reputation 714, for example, as described above in relation to Fig. 16.

Please rewrite the paragraph beginning on of page 51, line 11 to read as follows:

The first ratee reputation estimator 708 may receive the one or more ratee attribute reputations 702 and the weighting values 718, and generate the second estimated ratee reputation 710, for example, as described above in relation to Act 606 of the Fig. 16.

Please rewrite the paragraph beginning on of page 51, line 14 to read as follows:

The second ratee reputation estimator 712 may receive the first estimated ratee reputation deviation 720, the first estimated ratee reputation 722, the second estimated ratee reputation deviation 724 and the second estimated ratee reputation 710, and generate the third estimated ratee reputation 714, for example, as described above in relation to Act 610 of Fig. 16.

Please rewrite the paragraph beginning on of page 52, line 5 to read as follows:

Figure 18 is a data flow diagram illustrating an example system architecture 209 for implementing the methods, systems and variations thereof described above in relation to Figs. 2-17. The system 209 may include a client 210, a server 212, ratee reputation database 234, an authentication I.D. database 236 and a rater reputation database 238. The components 210, 212, 234, 236 and 238 of the system 209 may have a variety of configurations. For example, all these components may reside on a single computer, or any combination thereof may reside on a separate computer or multiple computers interconnected, for example, by a network. Further,

Cont Q19 any combination of these components may reside on separate networks, including separate LANs (Local Area Networks), MANs (Metropolitan Area Networks) and WANs (Wide Area Networks).

Please rewrite the paragraph beginning on of page 55, line 4 to read as follows:

Further, the server 212, through the frontend 230, may receive a user query 216 from the client 210. For example, the user query may be requesting the rater reputations of one or more entities, the ratee reputations of one or more entities, or the personalized ratee reputation of one or more entities from the perspective of a particular entity. The server 212 may convert the user query 216 into a database query, for example, a ratee query 240 or a rater query 248, and send the database query to the appropriate database. The server 212 then may send the query results 218 to the client 210. Q20

Please rewrite the paragraph beginning on of page 55, line 11 to read as follows:

The server 212 may be part of an on-line marketplace, for example, an agent-mediated marketplace. Accordingly, the client may request and receive marketplace information 220 from the server 230. Further, the server 212, as part of a transaction between an entity corresponding to the client 210 and a counterpart entity, may send communications 222 to the client 210. The communications 222 may include notifications pertaining to the current transaction, prompts for information from the entity corresponding to the client 210, reputations of the counterpart entity, and other information about the entity including demographic data, weighting values, etc. Q21

Please rewrite the paragraph beginning on of page 55, line 22 to read as follows:

The client 210 may include a user interface to allow interaction between a user and an application, for example, a reputation application or marketplace application implemented using the client 210 and server 212. The user interface may involve using CGI scripts to generate web pages in accordance with any of a variety of markup languages such as, for example, HTML, XML or SGML. Q22